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observations on the binocular combination of visual spectra, and offers, he thinks, a conclusive argument against the theory maintained by Brewster, and which has been so widely accepted.

Four hundred and seventy-fifth meeting.

January 25, 1860. — STATED MEETING.

The PRESIDENT in the chair.

The Corresponding Secretary read a letter from Professor George C. Swallow, in acknowledgment of his election as an Associate Fellow of the Academy.

Mr. Chauncey Wright and Mr. Simon Newcomb, of the Nautical Almanac Office, Cambridge, were elected Fellows in Class I. Section 1, Mathematics.

Professor Agassiz, followed by Professors Parsons, W. B. Rogers, and others, discussed several points in natural history and geology in reference to their bearing upon the origin and distribution of species.

Professor Gray communicated, from the author, the following: —

Characters of some New Grasses collected at Hong Kong and Vicinity by Mr. Charles Wright in the North Pacific Exploring Expedition. By COLONEL WILLIAM MUNRO, C. B., &c., of the British Army.

1. BERGHAUSIA MUTICA (sp. nov.): racemo decomposito; pedicellis apice barbatis; *spiculis muticis scabro-puberis; foliis linearibus* utrinque attenuatis margine pilis longis fimbriatis, vaginis glabriusculis apice longe fimbriatis. — An *Miquelia barbata*, Nees in Rel. Meyen.? A *Berghausia patula* differt floribus majoribus, arista nulla, pedicellis etc. multo longioribus et dissitis.

Hong Kong.

2. BERGHAUSIA PATULA (sp. nov.): racemo decomposito; pedicellis apice barbatis; spiculis hirsutis seta simplici basi non torta aristatis; foliis lineari-lanceolatis utrinque attenuatis. — Gluma valde varians. —

Cætera species, omnes Indicæ, sunt *B. Courtallensis*, Arn., et *B. scoparia, polypogonoides*, et *adscendens*, Munro.

Hong Kong.

3. ARISTIDA (CHÆTARIA) CHINENSIS (sp. nov.): panicula 10–12-pollicari patula exserta, radiis solitariis geminisve usque ad basin bipartitis 1–6-uncialibus nutantibus ad axillas barbatis supra bis dichotomis quandoque axillulis barbatis; ligula ciliata. — Glumæ inæquales, inferiori acuminata 5 lin. superiori sub 3 lin. longa. Flosculus apice non torto nec articulato.

Whampoa and Cum-sing-moon.

4. APOCOPIS WRIGHTII (sp. nov.): spica bifida; spiculæ inferioris sessilis gluma externa 8-nervi truncata obtusissima basi flava apice rubro-marginata fimbriata, nervis apice obsoletis; flosculis hermaphroditis omnibus nisi infima aristatis, arista 9-lineali; paleis fl. inf. masc. glumas superantibus. — Aff. *A. Royleanæ.*

Cum-sing-moon.

5. ISCHÆMUM LEERSIOIDES (sp. nov.): hirsuta; culmo gracili; foliis anguste linearibus; spica simplici unilaterali curvata; gluma spiculæ sessilis inferiori oblonga pectinata (*nec alata*) apice obtusiuscula; spiculis pedicellatis tabescentibus. — Aff. *I. pectinato.*

Whampoa, Lemma Island, and Hong-Kong.

6. ISCHÆMUM OPHIOUROIDES (sp. nov.): spica simplici semicylindrica; gluma spiculæ sessilis quadrato-oblonga scariosa alata retusa margine exteriore ciliis perpaucis absconditis pectinato; spiculis pedicellatis tabescentibus; foliis planis brevibus obtusis basi contractis et ciliatis.

Whampoa.

Professor Gray read a paper, entitled,

A Revision of the Genus Forestiera. By ASA GRAY.

FORESTIERA, *Poir.*, Genus Oleacearum.

Adelia, *Michx.*, non *P. Browne.* Borya, *Willd.*, non *Labill.* Bigelowia, *Smith*, non aliorum. *Piptolepis*, Benth.

* Folia membranacea, nunquam porulosa vel punctata.

1. F. ACUMINATA (Poir.): glabra; foliis ovato-lanceolatis ovatisve utrinque acuminatis longiuscule petiolatis serrulatis vel subintegerri-

mis; drupa oblonga vel fusiformi sæpius acuminata. — Adelia acuminata, *Michx., Fl.* 2, p. 225, t. 48. Forestiera ligustrina, *Gray, Man. Bot.*, ed. 2, p. 358, non *Poir.* — Wet, shady grounds along streams, Georgia to Illinois, Missouri, and Texas.

Var. β. PARVIFOLIA: foliis subpollicaribus, primordialibus subspathulatis obtusis, sequentibus pl. m. acuminatis; drupa breviter oblonga plerumque obtusa. — New Mexico; near Santa Fé, *Fendler*, no. 547. Below El Paso, *Wright*, no. 1699. Semeleuque Springs, *Dr. Bigelow*, in Mex. Bound. Coll.

Dr. Torrey, in the Botany of the Mexican Boundary Survey, has passed over specimens of this variety as belonging to *F. ligustrina.* Fendler's specimens clearly show it to be a form of F. acuminata, the fruit of which varies exceedingly in shape.

2. F. LIGUSTRINA (Poir.): molliter pl. m. pubescens; foliis obovatis ovalibus seu obovato-oblongis obtusis serrulatis (pollicaribus et ultra) basi in petiolum brevem angustatis; drupa ovoidea.

Var. α. foliis adultis glabratis vel glabellis; drupis subsessilibus. — Rocky banks, Florida to Georgia and Tennessee.

Var. β. PUBESCENS: foliis etiam adultis molliter pubescentibus; drupis pedicellatis. — F. pubescens, *Nutt. in Trans. Amer. Phil. Soc. n. ser.* 5, p. 177. Florida, Arkansas, Texas, New Mexico, Chihuahua. (Coll. *Lindheimer*, no. 700, &c.)

In the Botany of the Mexican Boundary Survey, Dr. Torrey has doubtless correctly reduced Nuttall's *F. pubescens* to *F. ligustrina;* but the difference in the length of the fruiting pedicels, unnoticed by him, is worthy of remark.

One or two mistakes of Richard, in Michaux's Flora, have led to confusion in respect to *F. ligustrina* and *F. acuminata,* and to a mistake in my Manual of Botany, which it is one object of this notice to correct. Richard characterizes *Adelia ligustrina* as with "foliis integerrimis," *A. acuminata* with "foliis levissime serratis"; whereas in fact the leaves of the former are always serrulate; but those of the latter are sometimes entire, as indeed they are represented in the figure, which figure, with the character, identifies the species completely. Moreover, *A. acuminata* is said to inhabit Carolina and Georgia, which is true, as to the latter State; *A. ligustrina,* Illinois and Tennessee, which is not the case, at least as to Illinois. In the Manual, following the indication of this habitat, I called our only

Northwestern species *F. ligustrina;* but it is certainly *F. acuminata.* I suppose that the habitats of the two species are transposed in Michaux's herbarium and Flora.

* * Folia coriacea impunctata.

3. F. SPHÆROCARPA (Torr. Bot. Mex. Bound. Surv. p. 168): tomentoso-puberula; foliis parvis (semipollicaribus) oblongis vel ellipticis obsolete crenulatis coriaceis subpetiolatis; drupa globosa pedicello subæquilonga. — Dry ravines of the Rio Limpio, *Dr. Bigelow.*

* * * Folia coriacea, adulta subtus porulosa-punctata.

4. F. RETICULATA (Torr. l. c.): glabra; foliis ovatis seu ovato-oblongis sæpe acuminatis (1 – 2-pollicaribus) serrulatis utrinque reticulato-venosis supra nitidis basi obtusis vel rotundatis; drupa ovali-globosa breviter pedicellata. — W. Texas, along the Limpio, Pecos, &c., *Wright,* no. 627, 565, *Bigelow, Schott.*

5. F. PORULOSA (Poir.): glabra; foliis oblongo-lanceolatis seu anguste oblongis plerumque obtusis integerrimis (1 – 2-pollic.) basi subpetiolatis, venulis haud conspicuis; drupa ovoideo-oblonga pedicellata. — Myrica segregata, Jacq. Ic. Rar. 3, t. 625. Adelia porulosa, Michx., Fl. 2, p. 224. Borya porulosa, *Willd. Spec.* 4, p. 711. Forestiera porulosa, Poir. Dict. Suppl. 2, p. 664. F. Jacquiniana, *Didrichson in Ind. Sem. Hort. Haun.* 1838, *ex Linnæa,* 27, p. 737. — West Indies? *Jacquin.* Coast of Florida, *Michaux, Dr. Leitner.* Eastern part of Cuba, *Wright,* no. 411.

Var. *β.* PHILLYREOIDES: foliis ovato-oblongis parvulis (subpollic.) subtus tomento laxo pubescentibus; floribus nonnullis (ut in sp. fere omnibus) hermaphroditis. — Piptolepis phillyreoides, *Benth. Pl. Hartw.,* p. 29. Forestiera phillyreoides, *Torr. in Bot. Mex. Bound. Surv.,* p. 167. Guanaxuato, Mexico, *Hartweg,* no. 259.

Var. *γ.*? ANGUSTIFOLIA: foliis glabris lineari-spathulatis oblongo-linearibus lanceolatis vel anguste linearibus obtusissimis plerumque aveniis. — F. angustifolia & F. phillyreoides, var. spathulæfolia, *Torr. l. c.* — Lower parts of Texas and Northern Mexico; common. Coll. *Berlandier,* no. 3024. *Lindheimer,* no. . *Wright,* no. 566.

Jacquin's figure, so long overlooked, but recently brought to notice by Didrichson, exactly represents the West Indian plant, as it occurs in Wright's collection (flowering specimens in coll. 1856 – 57, and fine fruiting ones in coll. 1859 – 60); and these accord pretty well with a

fragment of the Florida species in Dr. Torrey's herbarium, collected by the late Dr. Leitner. To the same species may safely be referred Bentham's *Piptolepis phillyreoides*, and probably Torrey's *F. angustifolia*, although this is more doubtful, as completely intermediate forms have not been met with. *Piptolepis*, as Dr. Torrey remarks, is identical with *Forestiera*, most, if not all, of the species producing some hermaphrodite blossoms.

Four hundred and seventy-sixth meeting.

February 14, 1860. — MONTHLY MEETING.

The PRESIDENT in the chair.

The Corresponding Secretary read letters from Messrs. Chauncey Wright and Simon Newcomb, of Cambridge, in acknowledgment of the notification of their election as Fellows. Also various letters relative to the exchanges of the Academy.

The Hon. Josiah Quincy addressed the Academy upon the subject of a memorial before the State Legislature, in behalf of the Boston Society of Natural History, and other societies, associated in the petition for a grant of land for practical scientific purposes. The subject of the memorial was also advocated by Professor Rogers and Mr. Emerson; and Messrs. Parsons, Loring, and Charles Jackson were appointed a committee to further the memorial before the Legislature.

Mr. Treadwell read a communication

On the Strength of Cast-Iron Pillars.

The great calamity which recently fell upon Lawrence having called the attention of the public to the subject of cast-iron columns or pillars, which are now so generally used in all our structures, I have thought that a few words upon this subject may not be without interest to the Academy. It may happen, moreover, that after considering the state of knowledge upon the subject, and the glaring discrepancies and contradictions contained in the practical rules and tables in common use by builders, the Academy may see fit to adopt some action tending to a revision of these guiding rules.